AGRIOPOCORIS MACILENTUS, sp. nov. (Fig. 4)

Colour.—Pale ferruginous. Bucculae dark stramineous. Segments 2 and 3 of abdomen apically mid-dorsally with a small elevated spot, femora and tibiae with suffused spots, pale stramineous. Apex of carinae on segments 4 and 5 of abdomen dorsally, blackish; segment 7 with pale yellow suffused areas.

Structure.—Segment 2 of antennae half as long as segment 1; remaining segments missing. Vertex with a median, sub-ovate depression anteriorly; epicranium with a shallow, oblique sulcus in front of ocelli and a short, transverse sulcus joining a short, longitudinal sulcus behind eyes. Tylus anteriorly with moderately long tubercles. Ocellar interspace a little less wide than distance from an ocellus to an eye. Pronotum with a median, longitudinal sulcus not reaching anterior margin. Rudimentary hemelytra broadly rounded apically, extended to middle of metanotum. Segment 7 of abdomen with lateral margins sinuate; segment broadly rounded apically. Anterior femora with four or five setigerous tubercles, more erect and longer than remaining tubercles.

Total length: ♂, 9·00 mm.

1 ♂ (type) New Mecklenburg (New Ireland), Bismarck Archipelago, 31.10.1887 (name of collector illegible), (under bark). Type in the South Australian Museum, Adelaide, South Australia.

Similar to *A. porcellus*, but differs in the more slender form, the sculpture of the dorsal surface of the abdomen (in this new species the carinae on segments 4 and 5 are less prominent), the shape and sculpture of the pygophore and the shape of the harpagones, which are regularly curved with the extreme apex sub-acute.

Family REDUVIIDAE.

Subfamily HARPACTORINAE.

AUSTROCORANUS, gen. nov.

Micropterous. Basal segment of antennae longer than head. Postocular longer than anteocular. Antennal tubercles remote from eyes. Anteocular and postocular tuberculate. Basal segment of rostrum shorter than segment 2. Anterior lobe of pronotum longer than posterior lobe. Scutellum produced apically. Segments 1 and 2 of abdomen dorso-laterally with an oblique carina; apical margins medially of segments 3–6 elevated. Anterior and median femora incrassate; all femora nodulose. Apical segment of tarsi longer than segments 1 and 2 together. Head, thorax and legs with sub-erect setae; head and body also with abundant adpressed setae.

Type species, *Austrocoranus mundus.*

AUSTROCORANUS MUNDUS, sp. nov. (Fig. 5)

Colour.—Black. Antennae brown: basal segment dark brown basally. Tibiae brown, darker basally and apically and with a sub-basal yellowish annulation. Segments 2–6 of connexivum with a sub-apical, marginal dark yellow spot. Setae greyish and piceous. Abdomen ventrally light brown with a median, longitudinal, narrow, dark brown stripe.

Structure.—Basal segment of antennae longer than segments 2 and 3 together. Transverse sulcus on vertex arcuate; median sulcus very short and narrow. Basal segment of rostrum extending to middle of eyes. Ocelli small, elevated, directed forwardly and laterally. Anterior lobe of pronotum rugose, except sulcate areas smooth; posterior lobe strongly rugose with an oblique carina sub-dorsally anteriorly and some tubercles. Scutellar spine rounded apically, oblique, concave on lower surface basally. Hemelytra extending to base of abdomen. Apical margin of segments 3–6 of abdomen dorsally thickened; segment 7 medially with a large, rounded, circular elevation.

Total length: ♂, 12·50 mm. ♀, 11–13·00 mm.

Greatest pronotal width: ♂, 2·20 mm. ♀, 2·00–2·20 mm.

1 ♂ (type), Australia; Armadale, Western Australia, 12.5.1934, K. R. Norris; 1 ♀, Beverley, Western Australia, 9.5.1913, F. H. du Boulay; 2 ♀♀, Beverley, Western Australia, 1913, W. W. Froggatt, (paratypes) in the Division of Entomology, C.S.I.R.O.,

Canberra, Australian Capital Territory; 1 ♂ (paratype), Armadale, Western Australia, 12.5.1934, K. R. Norris, in the British Museum (Natural History), London.

This new genus appears to be closely allied to *Coranus* Curtis (1833, Ent. 10), from which it differs in the slender segments 2 and 3 of the antennae, in the head being longer than pronotum and having tubercles on anteocular and postocular, in the relatively shorter basal segment of rostrum and in the position of the antennal tubercles which are remote from and not close to the eyes.

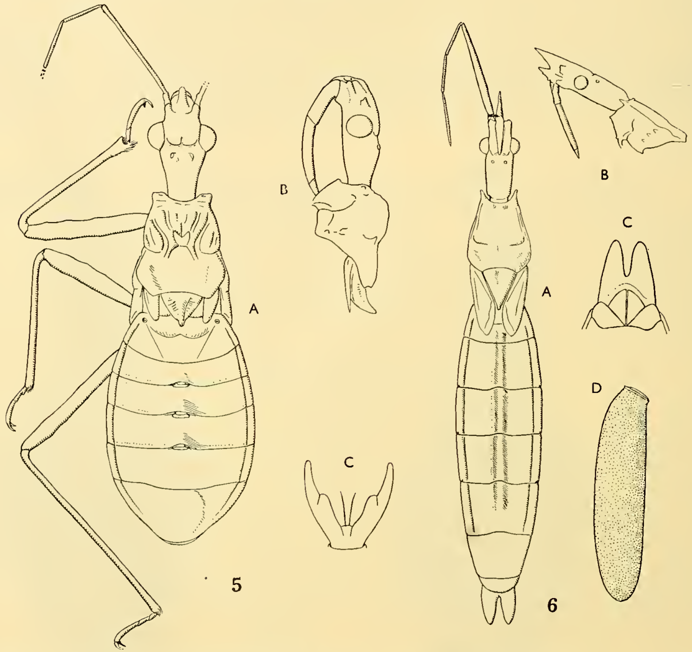

Fig. 5.—*Austrocoranus mundus*, gen. et sp. n. A, Whole insect, dorsal view; B, Head, pronotum and scutellum, lateral view; C, Claw of anterior tarsus.

Fig. 6.—*Dicranurocoris victoriae*, gen. et sp. n. A, Whole insect, dorsal view (legs omitted); B, Head and pronotum, lateral view; C, Apex of abdomen; D, Ovum.

*Dicranurocoris, gen. nov.

Elongate. Micropterous. Basal segment of antennae sub-equal in length to head. Tylus and vertex acutely produced. Antennal tubercles with a lateral tubercle. Head with low, rounded tubercles and with longer tubercles sub-basally. Ocelli small. Eyes moderately prominent. Rostrum straight; basal segment a little more than half as long as segment 2. Anterior margin of pronotum laterally produced; anterior lobe of pronotum longer than posterior lobe and with a low tubercle anteriorly on each side of mid-dorsum; posterior lobe with a low carina anteriorly on each side of mid-dorsum. Scutellum triangular, longer than wide, produced apically. Hemelytra extending to 2nd abdominal segment. Prosternum laterally anteriorly with a short projection. Anterior femora moderately incrassate and with a spine on lower surface near apex. Segment 8 of abdomen bilobate.

Type species, *Dicranurocoris victoriae*.

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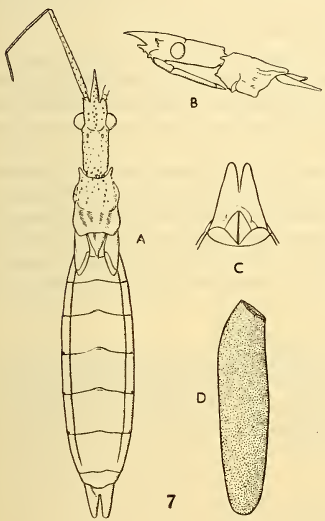
* δίκρανος = forked. οὐρα = tail. κορίς = bug.

DICRANUROCORIS VICTORIAE, sp. nov. (Fig. 6)

Colour.—Stramineous, except head, brown. Vertex with two sub-parallel, longitudinal piceous stripes. Basal segment of antennae suffused with brown; remaining segment yellowish. Apical segment of rostrum piceous. Segments 2–5 of connexivum apically laterally with a small brownish spot.

Structure.—Basal segment of antennae thick in basal half, narrower towards apex; shorter than remaining segments together. Ocellar interspace equal to width between an ocellus and an eye. Lateral projections on collar directed forwards, feebly curved apically. Disc of scutellum with a shallow, irregular depression; produced portion feebly elevated, rounded. Connexivum narrowly sulcate laterally.

Total length: ♀, 13·00 mm.



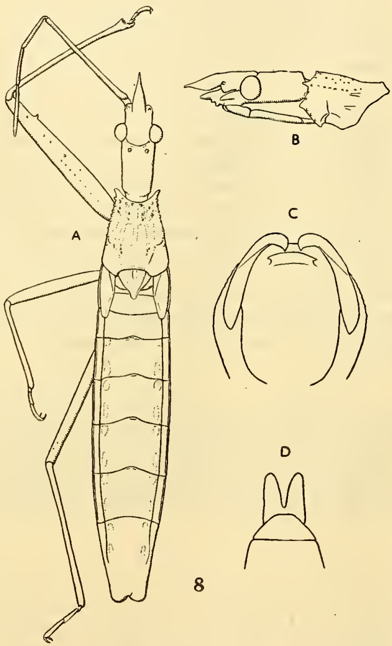


Fig. 7.—*Dicranurocoris canberrae*, sp. n. A, Whole insect, dorsal view (legs omitted); B, Head, pronotum, elytron and scutellum, lateral view; C, Apex of abdomen; D, Ovum.

Fig. 8.—*Dicranurocoris tasmaniae*, sp. n. A, Whole insect, dorsal view; B, Head and pronotum, lateral view; C, Pygophore, dorsal view; D, Apex of abdomen, ♂, dorsal view.

1 ♀ (type), 3 ♀♀ (paratypes), Australia; Toora, Victoria, 16.12.1937, R. V. Fyfe, in the Division of Entomology, C.S.I.R.O., Canberra, Australian Capital Territory; 1 ♀ (paratype), Toora, Victoria, 16.12.1937, R. V. Fyfe, in the British Museum (Natural History), London.

The nearest ally of this new genus is *Dicrotelus* Er. (1842, *Arch. Naturgesch.* 8 [1], p. 284), which it resembles in that the head has projections anteriorly and in the bilobate 8th segment of the abdomen. *Dicrotelus*, however, has strongly tuberculate legs and head, spinose anterior lobe and postero-lateral angles of posterior lobe of pronotum, tuberculate scutellum and connexivum.

Mature ova dissected from the abdomen of the type are cylindrical, feebly curved at opercular end, and smooth with minute reticulation. The colour dark yellow. For a small insect, the ova are relatively large, being approximately 2·50 mm. in length.

DICRANUROCORIS CANBERRAE, sp. nov. (Fig. 7)

Closely resembles the preceding species, but differs in smaller size and in coloration, being generally darker. In structure it differs in the more acute projection on the vertex, the more strongly tuberculate legs, basal segment of antennae and postocular, and the lenticular shape of the ocelli; projections on anterior lobe of pronotum distinctly tuberculate and posterior lobe with median and lateral depressions, disc of scutellum more deeply impressed; lobes of segment 8 of abdomen narrower.

Total length: ♀, 11·50 mm.

1 ♀ (type), Australia, Canberra, A.C.T., Dec. 1929, H. J. Willings, in the Division of Entomology, C.S.I.R.O., Canberra, A.C.T.

An ovum dissected from this specimen resembles that of *D. victoriae*, but is a little longer.

DICRANUROCORIS TASMANIAE, sp. nov. (Fig. 8)

Colour.—Testaceous. Head and basal segment of antennae in basal half suffused with brown. Pleura paler. Posterior femora piceous. Abdomen ventro-laterally with suffused piceous spots. Apical segment of rostrum piceous. Abdomen dorsally with brownish elevated spots on segments 3 and 4. Tubercles and spine on anterior and median femora brown. Pubescence pale greyish.

Structure.—Basal segment of antennae with low tubercles mainly on upper surface. Produced portion of vertex acute and curved downwards feebly; produced portion of tylus trilobate, the upper lobe moderately long and sub-acute. Anterior lobe of pronotum with scattered tubercles; posterior lobe with a low, rounded oblique carina sub-dorsally and with lateral area somewhat strongly depressed. Head with low rounded tubercles particularly on postocular. Prosternum laterally and propleural episternum with some tubercles.

Total length: ♂, 11·00 mm. ♀, 12·50 mm.

1 ♂ (type), 1 ♀ (paratype), Tasmania; New Norfolk, Lea (in tussocks), in the South Australian Museum, Adelaide, South Australia; 1 ♀ (paratype), New Norfolk, Tasmania, Lea (in tussocks), in the British Museum (Natural History), London.

Allied to both the preceding species, but perhaps more particularly to *D. canberrae* as regards structure and sculpture of head and legs.

A NEW GENUS OF THE PLECTASCALES.

By Lilian Fraser, Department of Agriculture, New South Wales.

(Plate xv; twenty-nine Text-figures.)

[Read 28th October, 1953.]

Synopsis.

An Ascomycetous fungus of a reduced or primitive type, obtained in culture from mouldy stick licorice, is described. It is placed in the Plectascales as the type of a new genus, and the name *Xeromyces bisporus* is proposed for it.

It forms abundant cleistocarps in culture, which originate as lateral three-celled branches on the mycelial threads. Two-spored asci are produced directly from cells resulting from the division of the central cell of the branch, and the wall is formed by the growth of branches from the basal cell of the branch. Stages in the development of the fructification are described.

In 1946, Mr. W. J. Scott of the C.S.I.R.O. Food Preservation Laboratory, Homebush, obtained in culture a fungus from mouldy stick licorice. This fungus was unusual in that it grew with moderate luxuriance on partly dried out media, on media rich in carbohydrates and at comparatively low relative humidity, but was unable to grow on ordinary laboratory media at high humidity.

Preliminary examination showed it to be an ascomycete of a primitive or reduced type and of some interest phylogenetically as well as physiologically. A more detailed investigation was therefore undertaken.

An elucidation of the main outline of its life cycle revealed no relationship with already described ascomycetes sufficiently close to justify its inclusion in a defined genus. It is therefore described as the type of a new genus and placed tentatively in the Plectascales.

Methods of Examination.

1. The fungus grew fairly rapidly and produced ascocarps very abundantly on a malt extract medium,* and Petri dishes poured with 20 ml. of this medium were inoculated and incubated at 25°C. Fragments of No. 0 microscope cover glass flamed and placed on the agar surface allowed the growth of the fungus somewhat sparsely over them. This growth adhered fairly well to the glass and could thus be fixed and stained with the minimum of disturbance.

2. The fungus also grew well in drop culture of liquid medium** on glass slides over saturated solution of potassium bromide.

The fixative most generally used was Craf 1 (Sass, 1940). Stains used were aceto-carmine, Harris' haematoxylin and Heidenhain's iron alum haematoxylin. Feulgen's fixative and stain as modified by Jones (1947) were also used to confirm nuclear detail. Cotton blue in lacto-phenol was useful for gross morphology.

The Fungus.

Mycelial Characters.

The mycelium in a carbohydrate-rich medium is rather coarse, septate, the cells multinucleate, the nuclei very minute and scattered. The young hyphae are densely granular, becoming vacuolate with age. Occasional inflated beaded densely protoplasmic cells are present. The colony in culture is radiating, at first white, closely adherent to the agar surface and not growing much above it, later becoming creamy because of the maturation of the ascocarps which are densely crowded on the surface of older colonies, giving them a finely granular appearance.

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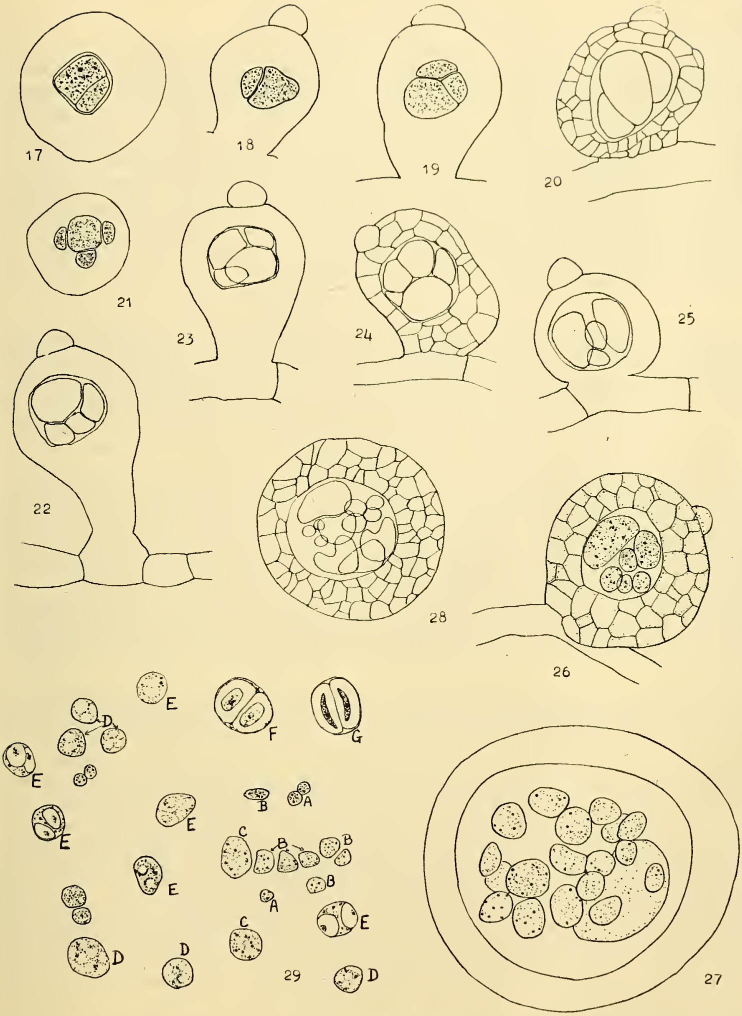
* Malt extract 50 gm.; Powdered agar 10 gm.; Water 50 ml..

** Dextrose 50 gm.; Malt extract 10 gm.; Water 50 ml.

Text-figures 1-16.

1, A-F, Aleuriospores showing variation in size and shape. × 900. 2, Hypha showing initial stage of development of ascocarp branch (A), and later stage (B), in which terminal and central cells have been cut off. × 1,080. 3, Young ascocarp branch prior to cell wall formation. × 900. 4, Young ascocarp branches, at the stage of the first division. × 1,080. 5, Young ascocarp branch showing initiation of first branch from basal cell. × 900. 6-7, A slightly later stage than that shown in fig. 5, three branch initials visible. × 1,080. 8-13, Stages in development of branches from the basal cell, to form a wall around the central cell (C), one branch pushing between it and the terminal cell (A). × 1,080. 14-15, Ascocarp branch, optical section showing wall structure, central cell (C) and terminal cell (A). × 1,320. 16, Vertical view of ascocarp branch showing wall structure and central cell. × 1,080.



Text-figures 17-29.

17-24, Stages in division of central cell: 17, Vertical view of ascocarp showing first division of central cell. × 1,080. 18, Lateral view of ascocarp showing first division of central cell. Shape of central cell suggests immanence of second division. × 900. 19, Second division of central cell. × 900. 20, Second division of central cell, subsidiaries cut off from opposite sides. × 1,080. 21, Vertical view showing 3 subsidiary cells cut off from different faces of central cell. × 900. 23-24, Division of central cell showing three to four subsidiaries of varying size. × 1,080. 25-28, Further division of central cell with production of subsidiaries and small ascus initials, rounded off and lying free within ascocarp wall. 25, 26, 28 × 1,080; 27 × 1,320. 29, A-G, Stages in development of asci and ascospores. × 1,080. A, Binucleate ascus initials; B, Later stage in growth of ascus, showing increased size and 4 to 6 nuclei; C, Developing asci with 8 nuclei; D, Developing ascus, showing non-staining circular areas associated with deeply staining granules (probably nuclei) which may be ascospore initials; E, Developing ascus, two ascospores in process of growth, other granular material, possibly disintegrating spore initials, crushed against wall; F, Ascus with young ascospores; G, Mature thick-walled fusiform ascospores still held together by ascus wall.

Accessory Spores.

Conidium-like spores which appear to be aleuriospores (Mason, 1933) are produced in culture at relative humidities below about 85%. They are borne terminally on lateral branches of the mycelium and are usually one-celled and more or less globose to pyriform, but occasionally two- or three-celled (Plate xv, fig. 1; Text-fig. 1, A–F). The spore wall is somewhat thicker than the wall of the mycelial cells and is highly refractive. The spores are not abstricted from the hyphae on which they develop and usually remain attached. However, spores which have become detached by the breaking of the hypha immediately below them are occasionally seen.

When a fragment of mycelium bearing aleuriospores is transferred to fresh medium the spores germinate by the production of a germ tube.

Development of the Ascocarp.

Ascocarps arise as short stout lateral branches on the young hyphae. The branch is at first a non-septate projection (Text-figs. 2A, 3). A terminal and a central cell are cut off from a basal section which remains part of the subtending mycelial cell (Text-figs. 4, 2B). The cells are densely protoplasmic, multinucleate and the nuclei are minute and scattered. Four rather stout branches then grow out from the basal cell just below the wall separating it from the central cell (Text-figs. 5, 6, 7). One or two of these branches usually develop more quickly than the others (Text-figs. 8, 9, 10, 11). They grow up and enclose the central cell, one pushing between it and the terminal cell (Text-figs. 8–13). They are at first continuous with the basal cell, but as they grow, cell walls appear (Text-figs. 11, 12, 13). Stout blunt branches are produced (Text-fig. 13) which finally form a complete pseudo-parenchymatous wall several cells thick around the central cell, which, at this stage, stains very deeply (Text-figs. 14–16). Throughout the subsequent growth of the ascocarp the terminal cell remains attached to the wall and stains faintly. No evidence of fusion between any of the wall cells and the central cell has been seen, so that if one of them is an antheridium its function has evidently become lost.

The central cell becomes somewhat enlarged and flattened, and cuts off one and then several somewhat smaller cells (Text-figs. 17–25). In some aspects these have the appearance of a compressed spiral (Text-figs. 22–24) as though they were cut off successively from the same part of the central cell. Other preparations (Text-fig. 21), however, show clearly that these cells are cut off from different faces of the central cell, probably successively but in rapid succession, since few stages intermediate between ascocarps containing a solitary central cell and those containing a central cell and several subsidiaries in addition are seen in any preparation. These cells separate from each other and lie free within the ascocarp wall. Further cells of smaller size are then produced, evidently as outgrowths cut off, either from the subsidiaries or from these and the original central cell as well. These small cells do not remain attached to each other, but round off and lie free (Text-figs. 25–28). Smeared ascocarps at this stage of development disgorge a mass of small cells which are mostly quite separate, occasional paired cells or small cells attached to the larger subsidiaries indicating their probable method of formation.

It could not be determined with certainty whether, after the formation of the subsidiaries, all subsequent growth took place by the cutting off of cells from them, whether the original central cell contributed directly to the production of the small cells also, or whether the small cells themselves divided. The central cell and its subsidiaries are multinucleate and the nuclei are scattered.

The ascocarp wall continues to grow to accommodate its increasing contents, apparently by intercalary division of the wall cells. When nearly mature the ascocarp contains free within this wall the mass of small cells and a number of larger cells, distorted and fainty staining, which are the central cell and its first formed subsidiaries. The number of these varies from 1 or 2 in small ascocarps to about 6 in larger fructifications.